

Work Order ID 61299

Friday, August 13, 2010 1:03:09 PM



Page 1

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 8/16/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 8/30/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: mf

Date: 10-8-13 Tooling:

Date:

Run Start



QC:

Date: \_\_\_\_\_ SPC (Y/N):

Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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D206-667-243

Rev C

0.00

100

DOCUMENT CONTROL

DC

Document Control

Memo

0.00

Photocopy bluefile and create labels as per PPP D206-667-203 CHG003

8/10/09/20

110



CNC Bend 2

CNC Alpha 160 Bender

0.00

BENDING MACHINE - CROSSTUBES

Memo

0.00

Bend tube as per Dwg D206-667-243 using CNC bender program 206L-AF

IX MB 10-09-20

120



QC

Quality Control

0.00

QC15- Crosstube Dimensional Check

0.00

Memo

8/10/09/20

AD 10-09-20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center ID

130

Operation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Crosstubes

Crosstubes

0.00

0.00

Memo

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 and drill table DT8577. Locate hole #6 for towers as per QSI 10. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D206-667-243. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243

6-Drill Fwd rivet holes using drill Jig DT8789FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D206-667-243.

8-C'sink holes as per Dwg D206-667-243.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-243 Inside of Cuff(Donot engrave on outside of tube)

10 -Deburr & Inspect for surface damage. Repair damage within limits as per

SP 10-09-21

DP 10-9-21

W/O:		WORK ORDER CHANGES					
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Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
StampDwg  
D206-667-243

140



Crosstubes Chemical Conversion

0.00

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

150



QC3- Inspect Part Finish

0.00

QC

Memo

0.00

Quality Control

160



QC5- Inspect part completeness to step on W/O

0.00

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center ID

170



Outsource2

Operation  
Description

Outsource process - NDT per QSI038 4.1

Set Up/  
Run Hours

0.00

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

CL 10/9/22 ①

Outsource process - NDT

Memo

Liquid Penetrant Inspection as per QSI 038Or  
Issue P/O: 10/16/15  
LPI as per ASTM 1417  
Level 2 Attach copy of NDT results to work order

180



Packaging

Packaging

0.00

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

CL 10/9/22 ①

190



QC

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Quality Control

Ensure results are as per Dwg D206-667-243

ML 10 09 27 ①

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

200



SprayPaint

0.00

*MW* 10 09 27(1)

SprayPaint

Memo

0.00

Spray Painting

- 1-Prime inside and outside crosstube as per QSI 005 4.2  
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:  
Start Time: 9:30  
Finish Time: 10:30

PAINT:  
Start Time: 10:30  
Finish Time: 3:30

210



QC14- Inspect Spray Paint

0.00

*J* 1009-28

QC

Quality Control

Memo

0.00

Wrap in plastic bag to protect from scratches

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

220



Crosstubes

0.00

*mjl 10 09 28 0*

Crosstubes

Memo

0.00

Crosstubes

1-Install nut plates as per Dwg D206-667-243.

230



Skidtubes

0.00

*mjl 10 09 28 0*

Crosstubes

Memo

0.00

Crosstubes

1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (3) top holes should be facing up.

A/R Magnobond 6398: 114158 Exp: 01/2011

2-Install supports and clamps as per Dwg D206-667-243. Torque clamps to 80-100 in lb mjl 10-09-28

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center ID

240



QC

Quality Control

Operation  
Description

QC5- Inspect part completeness to step on W/O

Set Up/  
Run Hours

0.00

S 10/9/29

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

250



Packaging

Packaging

Pick Kit

0.00

0.00

10/9/29 S

260



QC

Quality Control

QC4- 100% Inspect kits for completeness

0.00

0.00

S 10/9/29

f0

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

270



Packaging

0.00

Packaging

Memo

0.00

Identify and pack for shipping as per PPP D206-667-203

Location:

PPP Rev: D

280



QC

QC21- Final Inspection - Work Order Release

0.00

Quality Control

Memo

0.00

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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# Picklist Print

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Work Order ID: 61299



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 8/16/2010

Required Date: 8/30/2010

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:F 05.09 01 Add holes for compatibility with Bell Skidtubes KJ/JLM  
IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:ec  
IPP Rev:H 08-07-18 remove thread masking in step 12 DD verified by:EC  
IPP Rev:I 08-12-15 add magnobond DD verified by:EC  
IPP Rev J 09.01.06 ECN 08-562 EC verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN5-10A 		Purchased	No			250	Each	155.0000	10	10		10/19/2010	SL

Bolt

Location	Loc Qty	Loc Code
ST337	155	
114752	55	
115108	100	

AN5-32A



Bolt

Purchased	No	250	Each	232.0000	4
-----------	----	-----	------	----------	---

10  
4  
10/19/2010 SL

Location	Loc Qty	Loc Code
ST340	232	
113121	4	
114056	74	
114405	50	
115016	50	
115108	50	
15072	4	

AN5-34A



Bolt

Purchased	No	250	Each	88.0000	4
-----------	----	-----	------	---------	---

4  
10/19/2010 SL

Location	Loc Qty	Loc Code
ST340	88	
113149	38	
113226	50	

4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 61299



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 8/16/2010

Required Date: 8/30/2010

Start Qty: 1.00

Required Qty: 1.00

AN960JD516

NAS1149D0563J Purchased

No

250

Each

34.0000

18

18



M 114742 10/09/2010

Washer

Location	Loc Qty	Loc Code
ST	34	
103694	18	
107534	12	
109287	4	

D206-667-203TRN

Manufactured

No

220

Each

2.0000

1

1



B-62030 MB 10-09-20

Crosstube Turning Detail

Location	Loc Qty	Loc Code
LG	2	
60377	1	
60378	1	

D2873-043

Manufactured

No

220

Each

32.0000

2

2

MB 10.09.28

Nut Plate Assembly

Location	Loc Qty	Loc Code
LG	32	
53966	10	
56466	2	

D2873-045

Manufactured

No

220

Each

28.0000

2

2

MB 10.09.28

Nut Plate Assembly

Location	Loc Qty	Loc Code
LG	28	
53968	9	

B# 60982

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Parent Item Name: Crosstube Aft

Start Date: 8/16/2010

Required Date: 8/30/2010

Start Qty: 1.00

Required Qty: 1.00

D2892-1



Manufactured

No

230

Each

48.0000

2

2



M 10-09-28

Support

Location	Loc Qty	Loc Code
LG	48	
41986	12	
42785	20	
<u>53124</u>	11	
55787	5	

D3595-063-450



Manufactured

No

230

Each

30.0990

4

4



RUBBER CUSHION

M 10-09-28

B# 60983

MS20601-AD4W10



Purchased

No

230

Each

172.0000

14

14



RIVET

M 10-09-28

Location	Loc Qty	Loc Code
LG051	158	
114245	58	
<u>115405</u>	100	
ST322	14	
113220	14	

W/O:		WORK ORDER CHANGES					
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Start Date: 8/16/2010

Required Date: 8/30/2010

Start Qty: 1.00

Required Qty: 1.00

MS21042L5



Nut

Purchased No 250 Each 734.0000 4



10/10/2010 SP

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
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ST139	234	
-------	-----	--

114813	234	
--------	-----	--

ST300	500	
-------	-----	--

115156	500	
--------	-----	--

MS21920-22



Clamp(per MIL-DTL-8783C)

Purchased No 230 Each 102.0000 4



10.09.28

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

LG	102	
----	-----	--

111210	3	
--------	---	--

114077	99	
--------	----	--

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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DART AEROSPACE LTD

Work Order: 61299

Description: Crosstube High Aft (206L)

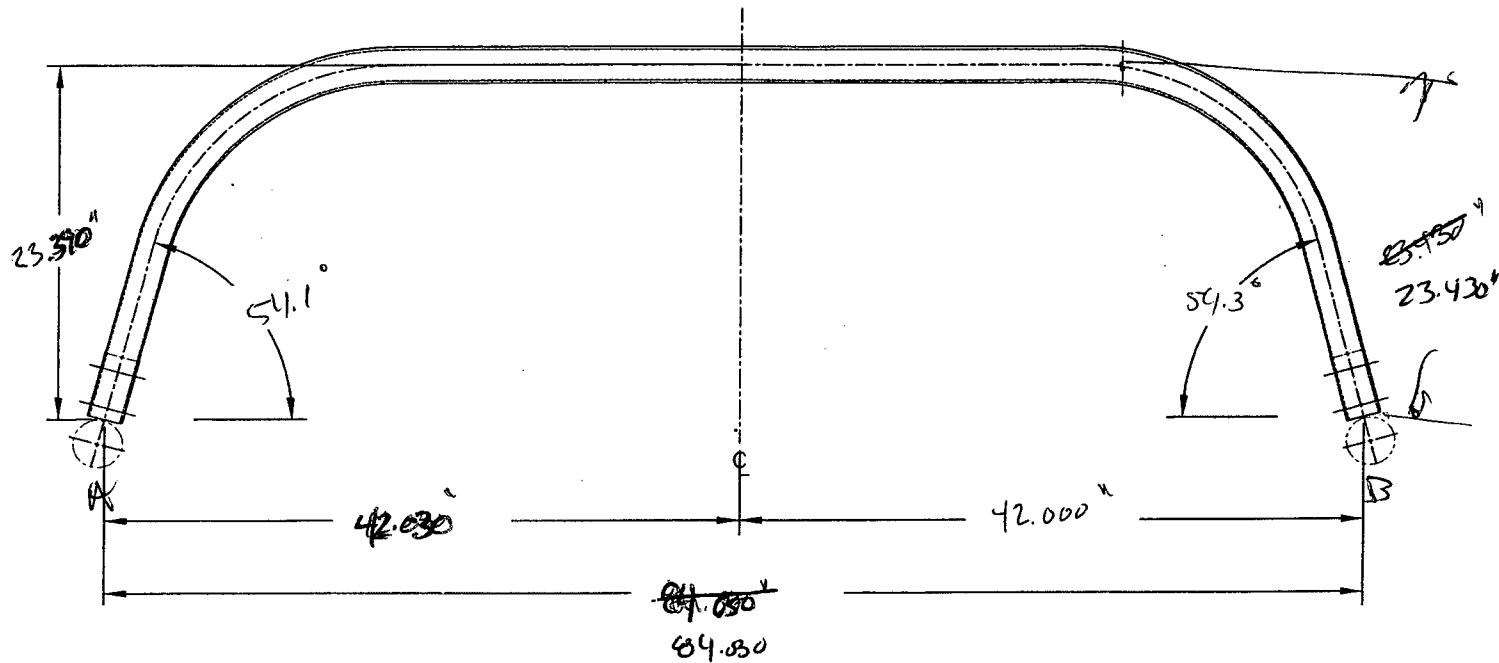
Part Number: D206-667-203

Inspection Dwg: D206-667-243

Rev: C

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Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	41.79	42.05
Angle	54	56
Total Span	83.58	84.1



Comments

QC15 Inspection	8
Date	10/09/20

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.17	Dwg Rev updated	KJ	
C	09.12.14	Dimensions update per Dwg Rev C	KJ	



8 7 6 5 4 3 2 1

D

Item	Qty	Part Number	Description
	-243		
1	X	D206-667-243	CROSSTUBE ASSEMBLY (206L HIGH AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W 10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6004-115  
FINISHED LENGTH =  $104.91 \pm 0.020$
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 21.9 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

X 61299

RELEASED  
*08/11/2017*

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-450 WAS D2858-400-773 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN 4-3, C5-3, D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BH7AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>q</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<i>q</i>	DRAWING NO.	REV. C
MFG. APPR.	<i>q</i>	D206-667-243	SHEET 1 OF 4
APPROVED	<i>q</i>	TITLE	SCALE
DE APPR.	<i>q</i>	CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS THE PROPERTY OF DART AEROSPACE LTD. IT IS TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

8 7 6 5 4 3 2 1

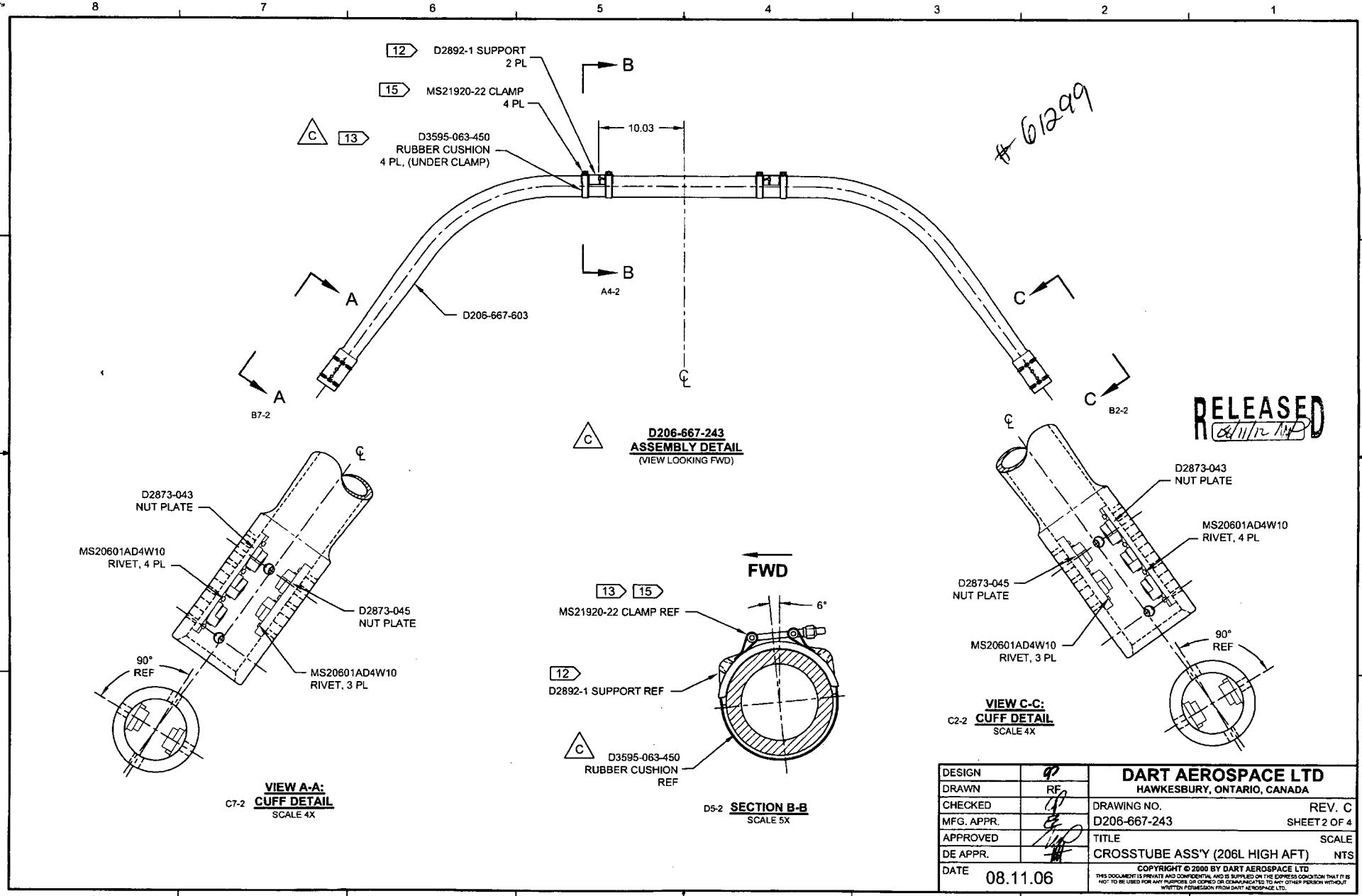
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



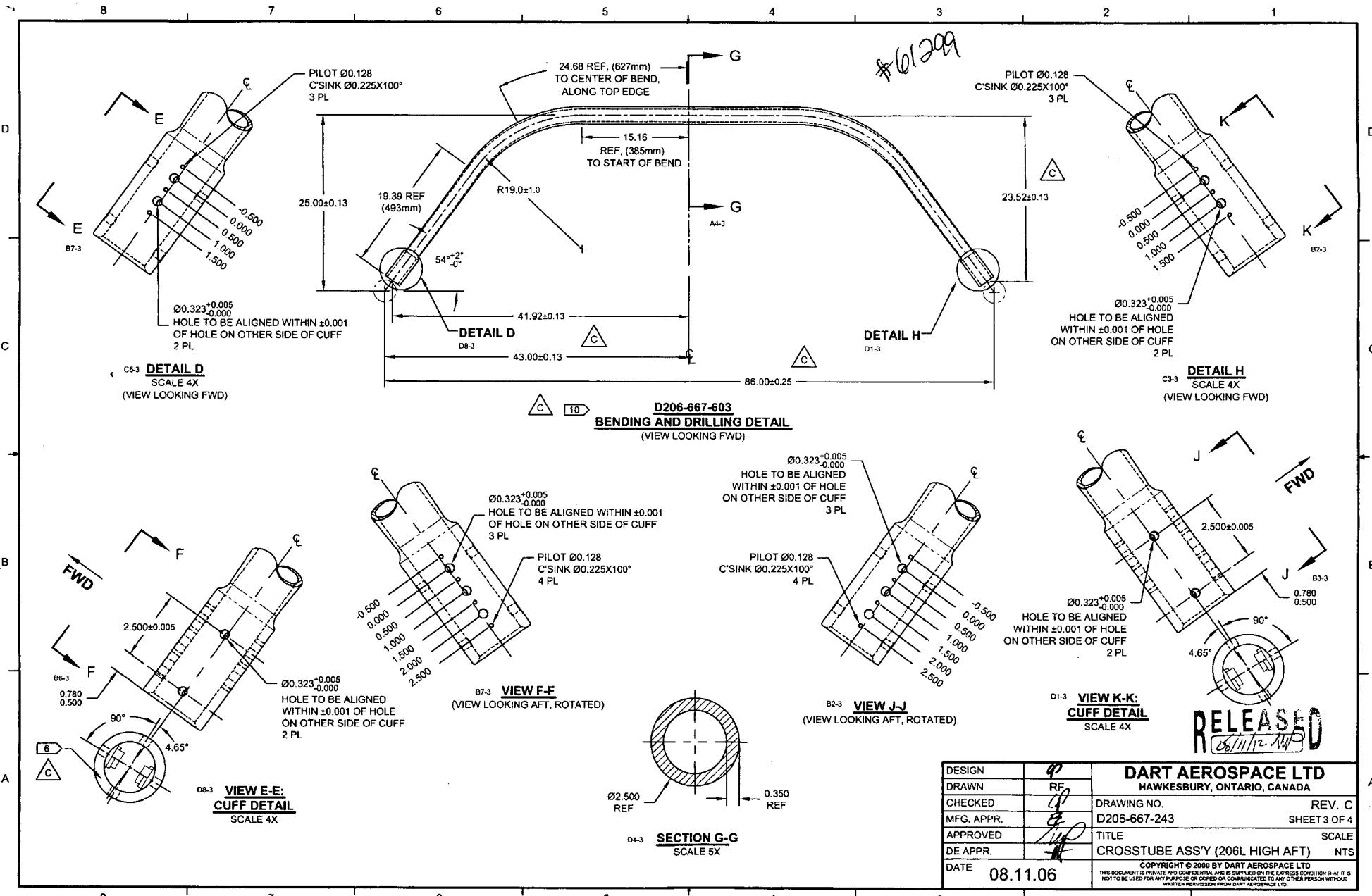
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



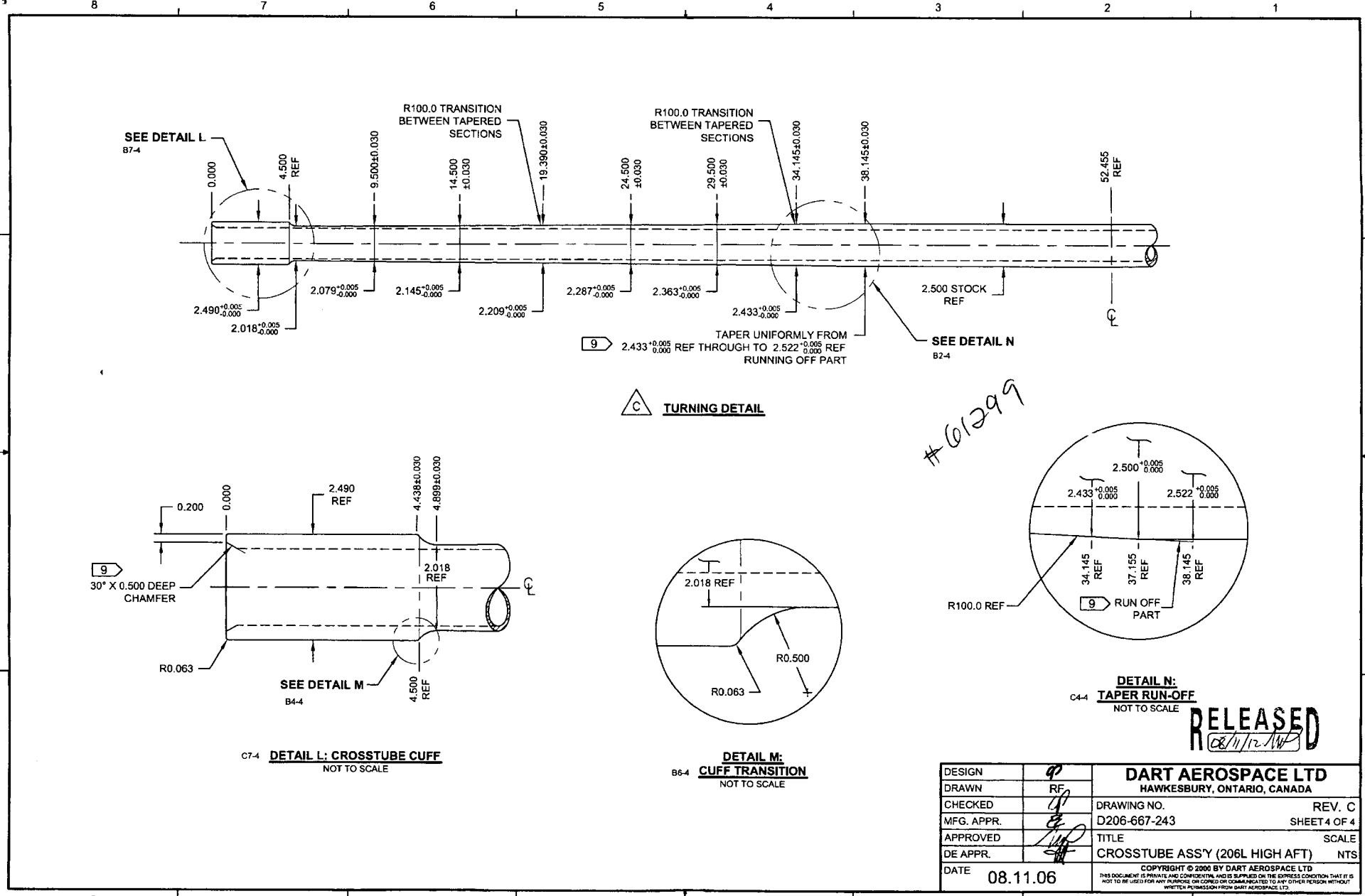
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	REV. C
CHECKED	RF	DRAWING NO. D206-667-243
MFG. APPR.	RF	SHEET 4 OF 4
APPROVED	RF	TITLE
DE APPR.	RF	SCALE
DATE	08.11.06	CROSSTUBE ASS'Y (206L HIGH AFT) NTS

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

## 5.0 PARTS LIST

Item	Qty -011	Qty -013	Qty -015	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description
	X									D206-667-011	SPACER BLOCK KIT
		X								D206-667-013	NUT PLATE KIT (-101/-103/-105/-203/-205)
			X							D206-667-015	NUT PLATE KIT (-201)
				X						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
					X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
						X				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
							X			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
								X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
									X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1			1							D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2				1						D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3					1					D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD
4						1				D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT
5								1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6									1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10			*2	*2	*2			*2		D2891-1	SUPPORT
11								*2		D2892-1	SUPPORT
12									*1	D2894-1	SUPPORT
13			*2	*2	*2			*2		D2856-400-694	ABRASION STRIP
14								*2		D2856-400-773	ABRASION STRIP
15									*1	D2856-600-851	ABRASION STRIP
16			*4	*4	*4			*4		MS21920-20	CLAMP
17								*4		MS21920-22	CLAMP
18									*2	MS21920-24	CLAMP
19			4	4	4			4		AN5-32A	BOLT
20								4		AN5-34A	BOLT
21			4	4	4	4	4	4		MS21042L5	NUT (OR MS21042-5)
22			8	8	8	8	8	8		AN960JD516	WASHER
23									*2	D3190-1	CHAFING SHIELD
30	8									AN4-6A	BOLT
31	8									AN4-7A	BOLT
32	16									AN960JD416	WASHER
33	2									D3193-041	SPACER BLOCK ASSEMBLY
40	2		*2		*2	*2	*2	*2	*2	D2873-043	NUT PLATE
41	2		*2		*2	*2	*2	*2	*2	D2873-045	NUT PLATE
42		2		2						D2872-043	NUT PLATE
43		2		2						D2872-045	NUT PLATE
44	10		10		10					AN5-7A	BOLT
45	10	10		10		10	10	10	10	AN5-10A	BOLT
46	4	4	4	10	4			4		AN5-30A	BOLT
47	4							4		AN5-32A	BOLT
48	18	18	10	12	10	10	10	10	10	AN960JD516	WASHER
49	4	4			6					MS21042L5	NUT (OR MS21042-5)

\*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/241/143/243, &amp; D407-667-145/245 ASSEMBLIES ABOVE



# LIQUID PENETRANT TEST REPORT

P- 15193

CLIENT	DART Aerospace			DATE	SEPT 26 2010		
ATTENTION	LINDA / CHANTEL			ACUREN JOB NO.	188 - 10 - 0889		
ADDRESS	1270 ABERDEEN ST. HAWKES BAY, ON.			PO/WO NO.	726151		
PROJECT	F. P. I. (10) ON CLASS TUBES &			WORK LOCATION	Hawkes Bay Plant		
ITEM(S) EXAMINED	(7) MACHINED PARTS			ACCEPTANCE STD.	AS TU 1417 REV./DATE 2005		

JOB DESCRIPTION	PROCEDURE NO. LT0001	REV./DATE	TECHNIQUE NO. LT-FLUO 2	REV./DATE
PART NO.	MATERIAL STAINLESS STEEL THICKNESS			
SCOPE	WET FLUORESCENT LIQUID PENETRANT + ALUMINUM INSPECTION CARRIED OUT ON 100% EXTERNAL SURFACE			
TEST DETAILS				
METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE
FAMILY BRAND	MAGNAFLUX			
PENETRANT	2L67	MINIMUM DWELL TIME 45 <sup>30</sup>	MIN.	<input type="checkbox"/> POST EMULSIFIED
PENETRANT REMOVER	H2O	MINIMUM DRY TIME >10	MIN.	<input type="checkbox"/> BLACK LIGHT S/N 16454
DEVELOPER	SK60 52	MINIMUM DWELL TIME 10	MIN.	<input type="checkbox"/> OUTPUT > 1000 $\mu$ W/cm <sup>2</sup>
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY	<input type="checkbox"/> AMBIENT < 2 fc
LIGHTING EQUIP.	<input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE			
OTHER	6A3 NO			
LIGHT METER S/N	1098866			CAL DUE DATE OCT 17 2010

TEST SURFACE				
SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input checked="" type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F	<input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F

RESULTS- <input checked="" type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL			
<p>7 SLEEVE'S → W.O. 62188 ✓</p> <p>1 CROSS TUBE → W.O. 61298 ✓</p> <p>1 CROSS TUBE → W.O. 61299 ✓</p> <p>1 CROSS TUBE → W.O. 61418 ✓</p> <p>1 CROSS TUBE → W.O. 61417 ✓</p> <p>1 CROSS TUBE → W.O. 61959 ✓</p> <p>1 CROSS TUBE → W.O. 61958 ✓</p> <p>1 CROSS TUBE → W.O. 61852 ✓</p> <p>1 CROSS TUBE → W.O. 61853 ✓</p> <p>1 CROSS TUBE → W.O. 615071 ✓</p> <p>1 CROSS TUBE → W.O. 61508 ✓</p>			
<p>Indications on CrossTubes W.O. #'s → 61852, 61853.</p> <p>10-09-77</p>			

Scope of Services  
 The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	Eric Downing	SIGNATURE	DTR #	EG3391
TECHNICIAN (SIGNATURE):			REPORT	
NAME (PRINT):			REVIEWED BY:	
	1 <sup>ST</sup> TECHNICIAN	2 <sup>ND</sup> TECHNICIAN	NAME	INITIALS
CGSB LEVEL	SNT LEVEL	CGSB LEVEL	SNT LEVEL	
CGSB REG. NO.	6606	CGSB REG. NO.		

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